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ENGLISH COMPUTER TERMS IN A BULGARIAN COURSE BOOK

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Abstract. *The article deals with some problems in the field of specialized translation, in particular, translation of computer terminology from English into Bulgarian. The focus of the investigation is a course book into Bulgarian concerning personal computers and the terms it consists of. The investigation is based on Newmark's terminology of translation procedures. A corpus of 159 terms is provided, analyzed and categorized. The analysis and categorization revealed that the translation procedures that have been most often used in the textbook that has been in the scope of the investigation are as follows: 54 examples of Descriptive equivalent; 49 examples of Through-translation; 24 examples of Shift and Transposition; 19 examples of Transference have been identified; 5 examples of Cultural equivalent; 4 examples of Couplets; 2 examples of Functional equivalent; 1 example of Naturalization; 1 example of Modulation. There are some translation procedures that do not occur in the analyzed examples; this might be due to the fact that the right terms for these translation procedures are not found in the excerpted examples. One must admit that the amount of terms regarded in this work is small compared to the whole field of the computer studies that is why no general conclusions can be drawn and further investigations can be suggested in this field of study, translation and development.*

Keywords: *specialized translation; translation of computer terms, English, Bulgarian*

Living in a high-technology world and using inventions and machinery whose names sound more than strange and unfamiliar to non-native speakers of English (in our particular case native speakers of Bulgarian) can lead to problems in understanding the specific terms. The object of this investigation is the Bulgarian course book "Въведение в персоналните компютри" (2011) /Introduction to personal computers/ (2011) by L. Gugov, and the translations of the English computer terms it contains. We have set the following goals: to analyze and compare the English computer terms and their Bulgarian translations; to investigate the ways in which the English definitions of the terms and the terms themselves change after their translation into Bulgarian; to find out which translation procedures are most used for the English-Bulgarian translation of terms.

Our goals require the fulfillment of these tasks: to excerpt the English terms and their Bulgarian counterparts from the course book; to juxtapose the definitions from the two languages; to apply Newmark's approach when defining the translation procedures used in the Bulgarian translation of the excerpted terms.

According to Peter Newmark, when one approaches a technical text one needs to read it first to understand it and then to assess its nature, its degree of formality, its intention, the possible cultural and professional differences between ones readership and the original one. (Newmark 1988, p. 156).

He differentiates translation methods from translation procedures, as he states that translation methods relate to whole texts, while translation procedures are used for sentences and the smaller units of language (Newmark 1988, p. 81).

Newmark gives the following methods of translation: word-for-word translation; literal translation; faithful translation; semantic translation; adaptation; free translation; idiomatic translation; communicative translation (Newmark 1988, p. 45-47). For him the central difficulty in technical translation is usually the new terminology (Newmark 1988, p. 152).

Newmark gives the following translation procedures that we have applied in this investigation in order to explain the manner in which basic computer terms are translated into Bulgarian:

- Transference: (loan word, transcription) the process of transferring a SL word to a TL text as a translation procedure. Newmark states that transference also includes transliteration, which relates to the conversion of different alphabets: e.g. Russian (Cyrillic), Greek, Arabic, Chinese, etc. - into English, The word then becomes a 'loan word';
- Naturalization: This procedure succeeds transference and adapts the SL word first to the normal pronunciation, then to the normal morphology of the TL;
- Cultural equivalent: This is an approximate translation where a SL cultural word is translated by a TL cultural word;
- Functional equivalent: a common procedure, applied to cultural words, requires the use of a culture-free word, sometimes with a new specific term; it therefore neutralizes or generalizes the SL word.
- This procedure, which is a cultural componential analysis, is the most accurate way of translating i.e. deculturalizing a cultural word.
- A similar procedure is used when a SL technical word has no TL equivalent;
- Descriptive equivalent: In translation, description sometimes has to be weighed against function. Description and function arc essential elements in explanation and therefore in translation;
- Synonymy: Newmark states that he uses the word 'synonym' in the sense of a near TL equivalent to an SL word in a context, where a precise equivalent may or may not exist. This procedure is used for a SL word where there is no clear one-to-one equivalent, and the word is not important in the text, in particular for adjectives or adverbs of quality (which in principle are 'outside' the grammar and less important than other components of a sentence). A synonym is only appropriate where literal translation is not possible and because the word is not important enough for componential analysis. Here economy precedes accuracy.
- Through-translation: The literal translation of common collocations, names of organizations, the components of compounds and perhaps phrases, is known as calque or loan translation. Newmark prefers the more transparent term 'through-translation'. And adds that normally, through-translations should be used only when they are already recognized terms.
- Shifts or Transpositions: A 'shift' or 'transposition' is a translation procedure involving a change in the grammar from SL to TL. One type is the change from singular to plural. A second type of shift is required when an SL grammatical structure does not exist in the TL. The third type of shift is the one where literal translation is grammatically possible but may not accord with natural usage in the TL.
- Modulation: A variation through a change of viewpoint, of perspective and very often of category of thought. It basically occurs when the translator reproduces the message of the original text in the TL text in conformity with the current norms of the TL, since the SL and the TL may appear dissimilar in terms of perspective.
- Recognized translation: One should normally use the official or the generally accepted translation of any institutional term. If appropriate, one can gloss it and, in doing so, indirectly show disagreement with this official version.
- Translation label: This is a provisional translation, usually of a new institutional term, which should be made in inverted commas, which can later be discreetly withdrawn. It could be done through literal translation.

- Compensation: This is said to occur when loss of meaning, sound-effect, metaphor or pragmatic effect in one part of a sentence is compensated in another part, or in a contiguous sentence.
- Paraphrase: This is an amplification or explanation of the meaning of a segment of the text. It is used in an 'anonymous' text when it is poorly written, or has important implications and omissions.
- Couplets: Couplets, triplets, quadruplets combine two, three or four of the above-mentioned procedures respectively for dealing with a single problem. They are particularly common for cultural words, if transference is combined with a functional or a cultural equivalent.
- Notes, additions, glosses: Used as an additional information. (Newmark 1988, p. 81-91).

We have juxtaposed the definitions from the above stated course book of the English and Bulgarian terms in order to fully understand what stands behind the name of the given term and have refered to Newmark and used his terminology in defining the translation procedures applied in the Bulgarian translation of the excerpted terms. We have grouped them according to the procedures. The results of the investigation show that **54** examples of Descriptive equivalent have been detected:

Case – Компютърна кутия; Single user – single task – Един потребител, една изпълнявана задача; Single user – multi tasking – Един потребител, многозадачна работа; Open source – Отворени системи; Miss – Неуспех; Fetch unit – Доставчик; Control Unit – Управляващо устройство; Instruction pointer – Програмен брояч; Execute unit – Изпълнителен блок; Branch Prediction Unit (BPU) – Устройство за предвиждане на разклонения; Arithmetic and Logic Unit (ALU) – Аритметично-логическо устройство; Floating Point Unit (FPU) – Устройство за изчисления с плаваща запетая; Bandwidth – Широчина на честотната лента; AGP (Advanced Graphics Port) – Ускорен Графичен Порт; RAM (Random Access Memory) – Оперативна памет; Latency – Недостъпност; Access time – Скорост; SIMM (Single In Line Memory Module) – Единичен вграден модул за памет; DIMM (Dual In Line Memory Module) – Двуреден модул памет; LPT (Line Printer Terminal) – Поредов принтер; Hot-swappable device – Устройство с горещо включване; SCSI (Small Computer System Interface) – Системен интерфейс за малки компютри; Transfer rate – Скорост на предаване на данни; Firmware – Вграден софтуер; Boot sector – Сектор за първоначално зареждане; Master-Slave – Главен диск – Подчинен диск; CD-R (CD Recordable) – Диск за еднократен запис; CD-RW (Compact Disc – ReWritable) – Диск за многократен запис; Burn – Записване; DVD (Digital Versatile Disc) -(Ди-Ви-Ди) Цифров многофункционален диск; Resolution – Разделителна способност; Nematic liquid crystal – Нишков течен кристал; TFT (Thin-Film Transistor) – Тънкослоен транзистор; Aspect ratio – Пропорция на екрана; Native resolution – Присъща разделителна способност; VGA (Video Graphics Array) – Видеографична матрица; Graphics processing unit (GPU) – Процесор на графичната карта; Dual ported – Двупосочна; HDMI (High Definition Multimedia Interface) – Мултимедиен интерфейс с висока разделителна способност; Coder/decoder chip (CODEC) – Устройство за кодиране и декодиране (Кодек); Sound Card Mixer – Миксер; Sampling rate – Честота на дискретизацията; Wavetable synthesis – Табличен вълнов синтез; Scroll button – Бутон за превъртане; Handheld scanner – Ръчен скенер; Flatbed scanner – Настолен скенер; Charge coupled device (CCD) – Устройство със зарядна връзка; Touchscreen – Сензитивен екран; Network – Компютърна мрежа;Local Area Network (LAN) – Локална мрежа; Star Network – Топология Звезда; Hub – Концентратор; Ring Network - Топология Кръг; Network interface card - Мрежова карта.

The other group of terms accounts to 49 examples that have been translated applying Through-translation:

Workstations – Работни станции; Tower – Кула; Kernel – Ядро; Shell – Обвивка; Multiuser – Многопотребителска; Executable versions – Изпълними версии; ASCII (American Standard Code for Information Interchange) – Американски стандартен код за обмен на информация; Hit – Попадение; Dual core – Двуядрен процесор; Bridge – Мост; System bus – Системна шина; Frontside bus (FSB) – Предна шина; Backside bus – Задна шина; USB (Universal Serial Bus) – Универсална серийна шина; Plug and Play (PnP) – Включи и работи; North Bridge – Северен мост; This is through-translation. South Bridge – Южен мост; BIOS (Basic Input / Output System) – Основна входно-изходна система (на кратко биос); Serial port – Сериен порт; Through-translation is used here. UART (Universal Asynchronous Receiver Transmitter) – Универсален асинхронен приемник/предавател; Parallel port – Паралелен порт; Through-translation is used here. This is 72; EPP / ECP (Enhanced Parallel Port / Enhanced Capability Ports) – Подобрен паралелен порт / Порт с разширени възможности (For the first part of the term the through-translation procedure is used. For the second part of the term the procedure of Shifts or Transpositions is used.); Hard disk – Твърд диск; Read / write head – Записващо/четяща глава; Track – Писта; TPI – Tracks per Inch – Писти

на инч; Sector – Сектор; Cylinder – Цилиндър; Master boot record (MBR) – Главен зареждащ запис; Root directory – Основна директория; Dot pitch – Точкова стъпка; Widescreen – Широкоекранен; Brightness – Яркост; Graphics Accelerator – Графичен ускорител; Computer display standards – Компютърни дисплейни стандарти; Sound card – Звукова карта; Frequency Modulation (FM) – Честотна модулация; Keyboard – Клавиатура; Mouse – Мишка; Frames per second (fps) – Кадри в секунда; Hot-pluggable – Горещо включване; Drum scanner – Барабанен скенер; Light pen – Светлинна писалка; Inkjet printer – Мастиленоструен принтер; Bubble jet printer – Мехурчесто-струен; Repeater – Повторител; Network protocol – Мрежов протокол; Client-server – Клиент-сървър; Bridge – Мост; Router – Маршрутизатор / Рутер (This term is translated with two different words that act as synonyms. The first translation (Маршрутизатор) is done with the translation procedure of Through-translation. "Рутер" on the other hand is translated with the translation procedure of Transference.).

The third group of terms represents 24 examples that have been translated using Shift and Transposition:

CISC – Complex Instruction Set Computer – Компютър със сложен набор инструкции; Instruction decoder – Декодер на инструкции; RISC – Reduced Instruction Set Computer – Компютър със съкратен брой инструкции; Decoded Instruction Queue – Опашка на декодираните инструкции; IRQ (Interrupt request line) – Линии за заявка за прекъсвания; ISA (Industry Standard Architecture) – Архитектура по промишлени стандарти; Peripheral Component Interconnect Bus (PCI) – Взаимовръзка на периферни компоненти; Serial access memory (SAM) – Памет със сериен достъп; Memory cells – Клетки на паметта; Chip density – Плътност на чипа; DRAM (dynamic random access memory) – Динамична памет с произволен достъп; SRAM (Static Random Access Memory) – Статична памет с произволен достъп; ROM (Read Only Memory) – Памет само за четене; PROM (programmable read-only memory) – Програмируема памет само за четене; EPROM (Erasable Programmable Read-Only Memory) – Изтриваема програмируема памет само за четене; DMA (Direct Memory Access) – Пряк достъп до паметта; Low-level formatting – Ниско ниво на форматиране; High-level formatting – Високо ниво на форматиране; FAT (File Allocation Table) – Таблица за разположението на файловете; Liquid crystal display (LCD) – Дисплей на течни кристали; Viewing angle – Ъгъл на наблюдение; Frame buffer – Буфер на кадрите; RAMDAC (Random Access Memory Digital-to-Analog Converter) – Цифрово-аналогов преобразовател с памет със случаен достъп; Digital Signal Processor (DSP) – Процесор за цифрови сигнали.

The procedure used for the translation of 19 terms in the Bulgarian course book is the one of Transference:

Hardware – Хардуер; Software – Софтуер; Graphical User Interface – Графичен потребителски интерфейс (Here both through-translation and transference are used. Transference, because the word "Interface" is taken from the SL and transcribed into Bulgarian. Because there are two procedures dealing with this problem the translation procedure here is Couplets.); Cache – Кеш памет; Chipset – Чипсет; Interface – Интерфейс; Compact disc – Компактдиск; Blu-ray – Blu-ray (The SL term is preserved. Blu-ray is transferred from English into Bulgarian as it is, preserving the English writing. This technique is called borrowing.); Flash memory – Флаш памет; Monitor, Display – Монитор, Дисплей; Pixel – Пиксел; Scan code – Скан-код; Scanner – Скенер; Trackball – Трекбол; Joystick – Джойстик; Server – Сървър; Peer-to-Peer (P2P) – Peer-to-Peer (P2P) (borrowing); Bluetooth – Bluetooth(borrowing);Wireless Fidelity (Wi-Fi) – Wi-Fi (The SL abbreviation is borrowed in the TL translation.).

What comes next in the calculation of the terms and the procedures implemented in their translation is a group of **5** examples of the procedure Cultural equivalent:

Decimal number system – Десетична бройна система; Switch – Комутатор; Binary number system – Двоична бройна система; Bus – Шина (For the other examples we shall regard the translation of *Bus* (шина) as literal in order to point out the other translation procedures used for the translation of the terms containing the word *bus*. Also, this shows how a term that has been once established helps the translation of similar terms.); Cathode ray tube (CRT) – Електроннолъчева тръба.

A group of 4 terms exemplify the application of the procedure of Couplets:

Land and Pit - Равен участък и Вдлъбнатина (In this example the procedure of descriptive equivalent is used for "land" and through-translation is used for "pit". Thus the procedure used for this example is Couplets.) Wide Area Network (WAN) - WAN мрежа (The translation in this example is made with the translation procedure called Couplets, which combines two different procedures. Here Transference is used for the abbreviation, and Descriptive equivalent for the word "мрежа", which

helps the Bulgarian reader to understand the first part of the term.); Graphical User Interface - Графичен потребителски интерфейс (Here both through-translation and transference are used. Transference, because the word "Interface" is taken from the SL and transcribed into Bulgarian. Because there are two procedures dealing with this problem the translation procedure here is Couplets.); Virtual memory - Виртуална памет (Here "virtual" is translated with transference, and memory is translated literally, or with through-translation. Thus the translation procedure here is Couplets.).

Two terms have been translated through the procedure Functional equivalent:

Motherboard (or Mainboard) - Дънна платка; Contrast ratio – Контраст.

One term has been translated applying Modulation: Mainframe – Суперкомпютър; and one term is an example of the procedure Naturalization: Form factor – Формфактор.

After completing the tasks set above, the following conclusions might be drawn: the total amount of computer terms extracted from the course book equals to 159. They have been categorized by Newmark's terminology of translation procedures. This analysis and categorization revealed that the translation procedures that have been most often used in the textbook that has been in the scope of our investigation are as follows:54 examples of Descriptive equivalent; 49 examples of Through-translation; 24 examples of Shift and Transposition; 19 examples of Transference have been identified; 5 examples of Cultural equivalent; 4 examples of Couplets; 2 examples of Functional equivalent; 1 example of Naturalization; 1 example of Modulation.

The outcome of the analysis shows that the Descriptive equivalent has been the most used translation procedure, closely followed by Through-translation. The fact that the Descriptive equivalent is the most frequently used procedure shows that the definitions of the terms play a huge role in the translation of computer terms. The fact that Through-translation is the second most used translation procedure is due to the fact that many of the computer terms are metaphors of concepts from everyday life which makes their literal translation an easy and often precise option. Shift and Transposition is mostly used due to the differences in the SL and TL grammars. Transference on the other hand is used primarily with sociocultural bias terms and words. Cultural equivalent is essentially used on terms that already have Bulgarian equivalent, and are often just slightly different from their English equivalent. Cultural equivalent, Couplets, Functional equivalent, Naturalization and Modulation are the least used translation procedures. Still there have been some translation procedures that did not occur in the examples, this might be because the right terms for these translation procedures were not found in the excerpted examples.

However, the amount of terms regarded in this work is small compared to the whole field of the computer studies that is why no general conclusion can be drawn but further investigation can be suggested in this field of study, translation and development.

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